King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 101 (163) Sec 08 - Quiz 3

Name: ID: Serial No.:

1. Using the method of cylindrical shells, set up, but do not evaluate, an integral for the volume of the solid obtained by rotating the region in the first quadrant bounded by the curves $y = e^{2x}$, $y = e^2$, and $x = 0$

   (a) about the line $x = -2$.

   (b) about the $x$-axis.

2. Find the average value of the function $f(x) = x\sec^2(2x)$ on the interval $\left[0, \frac{\pi}{8}\right]$

3. First make a substitution and then use integration by parts to evaluate the integral $\int \sin \sqrt{x} dx$

4. $\int \frac{\sin \theta}{\cos^3 \theta} dx =$